



## Clean Diesel In California

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# Overview

- ▶ **Why Is Diesel Important to Southern California?**
  - Goods Movement
  - Construction
  - Public Transit
- ▶ **What Do Americans Think?**
- ▶ **What is the Current Status of Diesel in the U.S./California?**
- ▶ **What is Diesel's Future in the U.S./California?**



# Clean Diesel Cars, Trucks and SUVs Poised for Comeback in the US: *Why?*

## ► Fuel Efficiency

- 20 to 40 percent better than gasoline
- Petroleum reduction – save 350,000 barrels per day with a 30 percent diesel market in 2020 (US Department of Energy)
- 10 to 20 percent reduction in greenhouse gases
- Ability to use renewable and other advanced fuels like Biodiesel, gas-to-liquids, etc.

## ► Performance

- Great acceleration, power and low-end torque
- Clean, quiet and fun-to-drive
- Applicable to variety of models

## ► Environmental Progress

- Cleaner diesel fuel available since September 2006
- Gasoline-diesel equivalent emissions standards
- New clean diesel technology



# Diesel's Popularity in Europe

- ▶ Diesel vehicles' popularity in Europe has increased rapidly in the past decade
- ▶ Common rail technology – now in its third generation – has changed the perception of diesel
- ▶ Overall in the European Union diesel penetration is 49.3% of new cars (2005)
- ▶ Diesel vehicles represent more than 70% of new vehicle registrations in Belgium; 60-70% in France, Spain, Austria and Portugal (2005)





## **What Do U.S. Consumers and Automakers Think About Diesel ?**

# Market Surveys: Current/Future Diesel Markets

## ▶ **Volkswagen Sales**

- Current sales approximately 15% diesel (45 state sale)
- Sales closely tied to fuel prices (25% of Jetta sales when prices topped \$3/gallon)
- Canadian sales parallel Europe (50% diesel)

## ▶ **J.D. Power & Associates:**

- Market Research predicted diesel market share to grow from current 3% to 7.5% by 2012
- 26 models expected to be on market by then
- Consumers familiar with diesel technology, but more education needed about modern clean diesel
- Fuel prices main driver in consumer changes
- Diesel less of a price premium than hybrids



# Clean Diesel: ULSD

- ▶ Ultra-low sulfur diesel fuel (ULSD)
  - 15 parts per million (ppm) sulfur
  - Worldwide standard (Europe in lead)
  - Introduced in California Sept. 1, 2006
  - Introduced nationwide Oct. 15, 2006
- ▶ Benefits of ULSD
  - Enables particulate filters
  - Reduces PM, NOx
  - Enables new engine technologies



# ULSD Enables Clean Up of Older Diesel Through Retrofits

- ▶ With ULSD, more retrofits are possible
  - Using cleaner fuel cuts emissions 10%
  - ULSD enables emissions filters, catalysts, up to 60-90% cleaner
  - ULSD enables more repower or new engines upgrades, up to 60-90% cleaner
  - Federal and state monies are available for retrofit projects
    - CMAQ
    - DERA
    - Carl Moyer





# Retrofits Are Cost-Effective

- ▶ Comparisons of Typical CMAQ Funded Projects (cost for equivalent emissions reductions)
  - Repower Lumber Loader, \$3,169
  - Repower Transit Buses, \$5,000
  - Repower Off-Road Engines, \$5,331
  - Repower Construction Equipment, \$5,331
  - Replace Older Trucks (with clean diesel truck), \$7,200
  - Vanpool programs, \$10,500
  - Bus replacement w/CNG, \$45,900
  - Alternative fuel buses, \$126,400

\*[www.dieselforum.org/retrofit-tool-kit-homepage/](http://www.dieselforum.org/retrofit-tool-kit-homepage/)





**What is the Status of  
Diesel in California?**

# Offerings of Diesel Products This Year

## Medium-Duty Trucks

### - SUVs

- ▶ Chevrolet Silverado
- ▶ GMC Sierra
- ▶ Dodge Ram
- ▶ Ford E-Series
- ▶ Ford Excursion
- ▶ Ford F-Series

## Cars & SUVs

- ▶ Mercedes-Benz E-320 CDI
- ▶ Mercedes R-class
- ▶ Mercedes M-class
- ▶ Mercedes GL
- ▶ Jeep Grand Cherokee
- ▶ VW Jetta
- ▶ VW Golf
- ▶ VW New Beetle  
Available in 45 states
- ▶ VW Touareg



# Diesels Coming – 2008/2009

- ▶ Honda
- ▶ BMW
- ▶ VW
- ▶ Audi
- ▶ Mercedes-Benz
- ▶ Jeep
- ▶ Mitsubishi
- ▶ Ford (trucks)
- ▶ General Motors
- ▶ Nissan

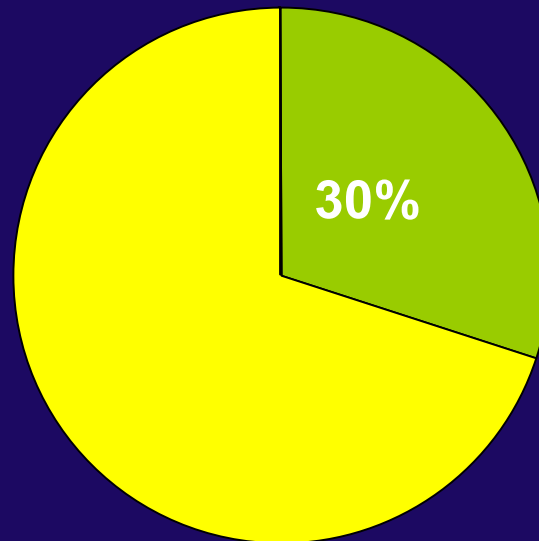


# No, you don't have to go to a Truck Stop to Get Diesel Fuel.

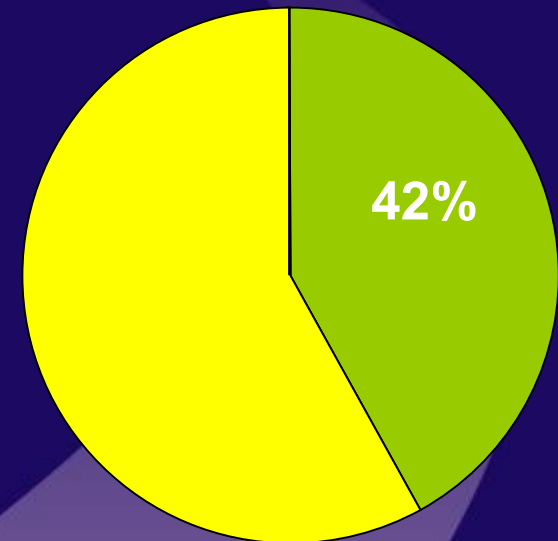


**Diesel  
Technology  
Forum**

## Fueling Stations Offering Diesel



2000



2005

Source: EPA & Hart Downstream Energy for the Diesel Technology Forum; 2005



**What is  
Diesel's Future?**

# One Man's Perspective

“Diesel now is odorless, invisible and quiet, an amazing accomplishment in 20 years. It will play a role in reducing our state's CO<sub>2</sub> emissions.”

- Dr. Robert Sawyer  
Chairman, California Air  
Resources Board  
Nov. 28, 2006



# The Opportunity for Diesel in California

- ▶ **Clean diesel in the ports**
  - ULSD use
  - Retrofit/repower older vehicles
  - Replace oldest vehicles
- ▶ **Clean diesel in on-road trucks**
  - ULSD use
  - Retrofit/repower of older vehicles
  - Replace oldest vehicles with new '07 technology (90% cleaner)
    - 2010 even cleaner (98% cleaner)
  - Use renewable fuels like biodiesel to further reduce emissions, petroleum use
- ▶ **Clean diesel in cars**
  - Fit of diesel product in marketplace – economics, emissions, future to be determined
  - Potential fuel efficiency gain, petroleum use reduction





# California Energy Commission on Diesel's Role in Petroleum Reduction

“The state can pursue other strategies to increase transportation efficiency, including increasing the number of hybrid electric, plug-in hybrid electric and light-duty diesel vehicles in California...”

-- California Energy Commission  
Integrated Energy Policy Report (2005)



# Renewable Diesel's Role

- ▶ All diesel vehicles can potentially use renewable diesel (most mfg. approve B5 or 5% biodiesel)
- ▶ Issues that need to be addressed
  - Consistent Quality of fuel – no current blend standard in place that is acceptable to engine manufacturers
  - Supply of feedstocks – food vs. fuel debate, renewable vs. waste feedstock



# Future Diesels

- ▶ Diesel development is continuing
- ▶ New technologies will be coming on line in the near future
  - Diesel-electric hybrids
  - Diesel HCCI (Homogeneous Charge Combustion Ignition)
  - Advanced emissions reduction technology
  - Advanced in-engine emissions technology





**Questions?**

**Clean Diesel Technology in  
California—making a difference**

[www.dieselforum.org](http://www.dieselforum.org)